Little Creek Reservoir
2007

Little Creek Reservoir is owned by the City of Newport News and is located within James City County. This 947-acre reservoir has a relatively small watershed that can be supplemented by water pumped in from Chickahominy Lake or from Diascund Reservoir. Water from Little Creek Reservoir is pumped to the terminal reservoirs in the Newport News water supply system. James City County operates a public park at the lake. A boat ramp, courtesy pier, fishing pier, and concession stand are present at the park. The reservoir has numerous creek arms and coves that provide plenty of areas for anglers to try their luck. The majority of the reservoir has steep shoreline drop-offs with crystal clear water. The use of outboard engines is prohibited on Little Creek Reservoir. The use of trolling motors is permitted. The park rents jon boats with trolling motors and can be reached by calling (757) 566-1702.

The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Little Creek Reservoir on April 27, 2006. The last electrofishing survey was on May 5-6, 2003. The 2006 sample was concentrated in 6 different regions of the reservoir to get a broad spectrum of the fish assemblage present. Each sample run was 20 minutes long to combine for a full two hours of electrofishing effort. The sample consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. A total of 12 species of fish were collected. This report will concentrate primarily upon the five major fish species: largemouth bass, bluegill, black crappie, chain pickerel and redear sunfish.

Species	# Collected	Largest Length	Average Length
Largemouth Bass	39	17.4"	10"
Bluegill	540	5.8"	3.4"
Black Crappie	29	15"	7.7"
Chain Pickerel	48	19.1"	11.9"
Redear Sunfish	186	10"	4.2"

Table 1. Summary of the April 27, 2006 electrofishing survey for the primary fish species of Little Creek Reservoir.

The largemouth bass population within Little Creek Reservoir appears to be in fair condition. The clear waters and steep shoreline habitat have historically produced limited success when it comes to sampling bass. The overall size structure favors the presence of bass in the 13 to 16 inch range. A total of only 39 largemouth bass were collected. The CPUE (Catch Per Unit of Effort) for largemouth bass was 19.5 bass/hr. This catch rate is much lower than most waters within the region. The 2003 sample revealed a similar low abundance of bass (CPUE 20.7 bass/hr). The size distribution of the collected bass in 2006 can be seen on the enclosed length frequency graph.

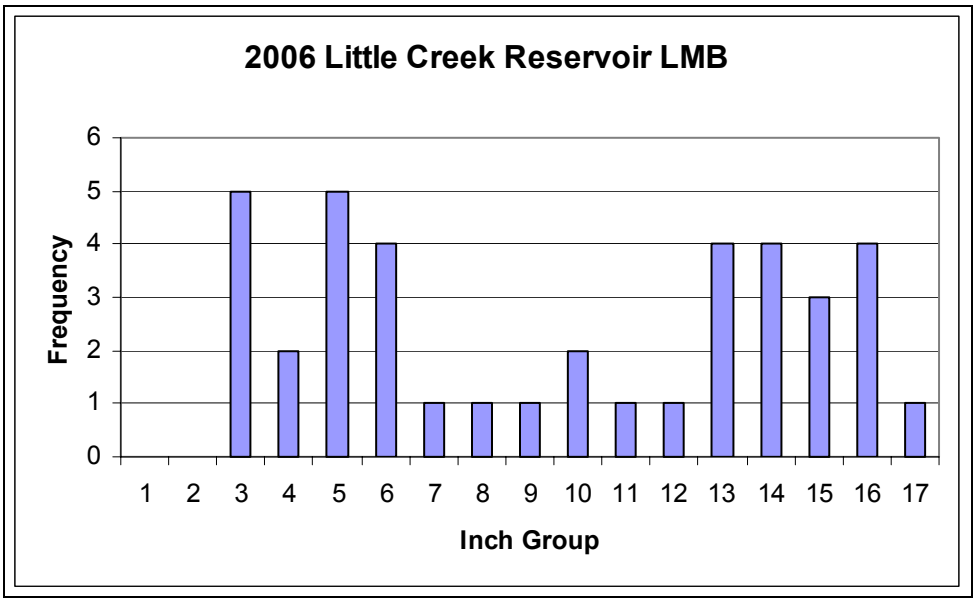

Figure 1. Length frequency distribution of largemouth bass collected from the electrofishing survey of Little Creek Reservoir on April 27, 2006 (N=39, CPUE=19.5 f/hr).

The 2006 distribution showed a high proportion of bass in the 13 to 16 inch size range (15 of 39 bass, 38.5%). These bass will provide a great deal of the fishing excitement. The other abundant group of fish was the young bass in the 3 to 6 inch range (16 of 39 bass, 41%). This group most likely represents the good recruitment from the 2005-year class. No otoliths were taken for age analysis as all bass were released. Our sampling efforts are just a representative picture of the fish community collected along the shoreline and various habitat structures on April 27, 2006. Larger bass may have been able to escape from the electrofishing boat or may just be living in other areas of the reservoir that were not sampled.

With largemouth bass being the most popular game fish in this country, it has been considered that a "preferred" bass is one that is over 15 inches in length. It is through this size classification that population dynamics are analyzed. The PSD (Proportional Stock Density) is the proportion of bass in the population over 8 inches (stock size) that are also at least 12 inches (quality-sized). The sample showed an extremely high PSD value of 77, which is a direct reflection of the 17 quality-sized bass. The sample had a total of 22 bass that were stock size or larger. A balanced bass/bluegill fishery has a bass PSD value within the 40 – 70 range. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of bass in the population over 8 inches that are also at least 15 inches. The high RSD-P value of 36 is a direct reflection of the 8 preferred fish being collected. The 2006 PSD and RSD-P values show an improvement from the 2003 values (PSD = 52, RSD-P = 30). The limited sample size must be taken into account when analyzing population indices.

Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. The

higher the value, the better the condition of the fish in terms of overall body mass. The relative weight values for stock, quality, and preferred bass (>8", >12", >15") were 95, 94 and 94 respectfully. These relative weight values showed an increase from the 2003 sample and fall within the desired range of 95 to 100.

A total of 10 bass were collected during the trap net survey during April 5-7, 2006. These fish were mostly juveniles that ranged in size from 3 to 7 inches. One 14 inch bass was also collected. The gill net surveys collected a total of 18 largemouth bass. The bass ranged in size from 11 to 19 inches. The largest bass of 19 inches weighed 4.3 pounds. Age and growth analysis of a sub-sample of bass show that the bass are growing rather well. The mean length of 3.5 year old bass was calculated to be 14.8 inches.

The sample revealed the bluegill fishery to be dominated by fish less than 6 inches in length. Electrofishing effort was able to collect 540 bluegills over the course of three sample runs (1 hour). This CPUE of 540 bluegills/hr shows an increase from the 2003 sample (415 bluegills/hr). The average sized bluegill was only 3.4 inches in length. The PSD for bluegill is the proportion of bluegill over 3.15 inches (stock size) that are also at least 5.9 inches (quality size). The bluegill PSD value of zero is a direct reflection of no quality-sized bluegills collected. The PSD value is well below the desired 20 - 40 range that would represent a balanced bluegill population. The largest bluegill measured 5.8 inches in length. The majority of the bluegills were within the 2 to 4 inch range.

Trap net sampling was conducted on Little Creek Reservoir on April 5-7, 2006. The main purpose of this type of sampling is to collect the schooling fish such as black crappies that target the shorelines as spawning season approaches. The reservoir was divided in half with 10 trap nets set on the western half of the reservoir the first night and then 10 nets reset to the eastern half of the reservoir on the second night. A total of 20 net nights were used to assist with the evaluation of the fishery. The trap nets were able to collect 12 species of fish. The nets were very successful in catching bluegills. A total of 3,076 bluegills were collected over the course of two nights. The CPUE of 153.8 bluegills/net night is very impressive. The majority of the bluegills were in the 2 to 5 inch range. The PSD value of 3 is a direct reflection of only 58 quality-sized bluegills and the collection of 1,707 stock-sized bluegills. The abundance of small bluegills offers a great prey source for the adult predators in the fishery.

The black crappie population appears to be in decent shape with majority of sample consisting of crappies in the 8 to 12 inch range. The electrofishing sample was only able to collect 29 black crappies for a CPUE of 15.5/hr. This catch rate is much lower than the 2003 sample (CPUE = 27.8/hr). Black crappies tend to school in waters deeper than bass and bluegills. Taking this into account, the typical shoreline sample can be very random as to whether or not a school is encountered during a sample run. The size distribution of the 2006 sample can be seen on the length frequency histogram. The largest black crappie measured 15 inches and weighed 1.57 pounds. The average size crappie measured 7.7 inches due to the presence of 18 crappies in the 6 to 7 inch range.

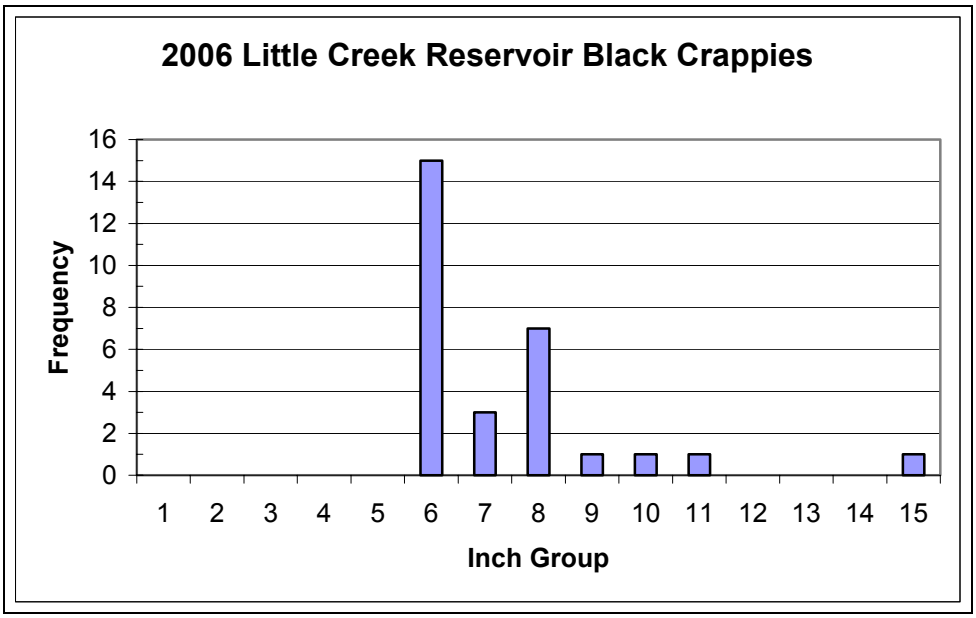

Figure 2. Length frequency distribution of black crappies collected from the electrofishing survey of Little Creek Reservoir on April 27, 2006 N = 29, CPUE = 14.5/hr)

The trap net survey collected a total of 61 black crappies for a catch rate of 3.05 crappies/net night. The steep shorelines made for a difficult time of setting nets off of desired points. The majority of the sample consisted of crappies in the 8 – 12 inch range. Otoliths were used to verify the average length of each age class. The fish ranged in age from 1 to 7 years old. The average length for each age group was: Age 1 = 3.82 inches, Age 2 = 6.14 inches, Age 3 = 8.46 inches, Age 4 = 10.12 inches, Age 5 = 10.75 inches, Age 6 = 11.89 inches, Age 7 = 12.05 inches.

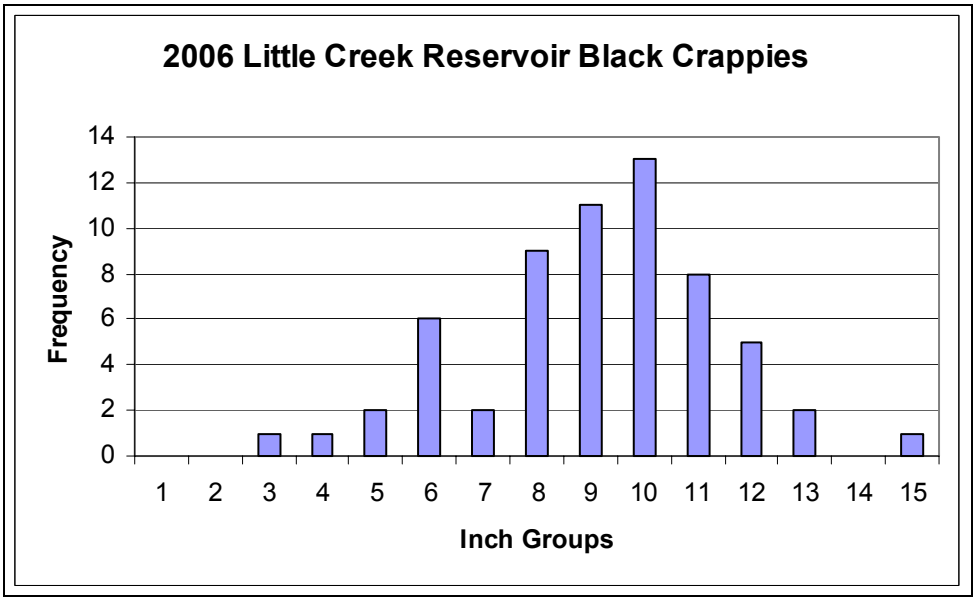

Figure 3. Length frequency distribution of black crappies collected from the trap net sampling of Little Creek Reservoir on April 5-7, 2006. (N = 61, CPUE = 3.05/net night)

The gill net sampling was the most productive of the three surveys with a total of 90 black crappies collected. The catch rate of 4.1 crappies/100 m sq showed some improvement over the 2003 survey (CPUE = 2.24 crappies/100 m sq). The collection centered around the 8 to 10 inch range. A total of 10 crappies of 11 inches or larger were collected. The largest crappie measured 16.5 inches and weighed 2.48 pounds. Length at age data was collected from the crappies collected during the November sample. The mean length at age for each age group was: Age 2+ = 7.47 inches, Age 3+ = 8.93 inches, Age 4+ = 9.57 inches, Age 5+ = 10.67 inches and Age 8+ = 13.56 inches. The mean length per age group is highly influenced by the number collected per group. The Age 3+ group was the most abundant with a collection of 27 crappies. The Age 5+ group consisted of 15 crappies.

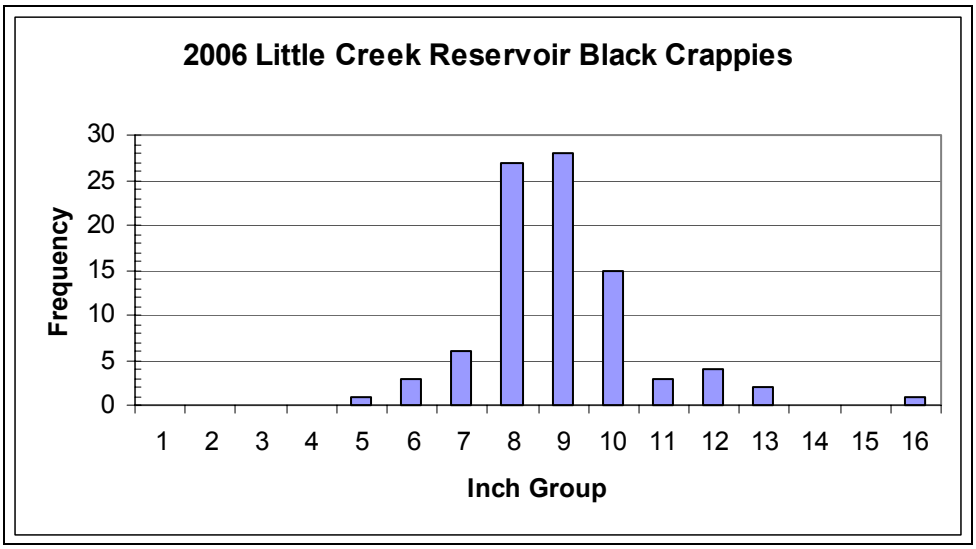

Figure 4. Length frequency distribution of black crappies collected from the gill net survey of Little Creek Reservoir on November 27-29, 2006 and December 11-13, 2006 (N = 90, CPUE = 4.1 crappies/100 m sq).

The chain pickerel population offers some diversity to the fishery and will provide some fishing action when the bass are not cooperating. A total of 48 chain pickerel were collected for a CPUE of 24/hr. This catch rate is slightly higher than the 2003 sample (CPUE = 22.61/hr). The 2006 size distribution ranged from 5.2 to 19.1 inches. The majority of the chain pickerel (56%) were less than 12 inches in size. The reservoir has seen some good recruitment of juvenile chain pickerel the last few years. Due to the abundance of young fish, the average-sized chain pickerel collected during the electrofishing survey measured 11.9 inches. The largest chain pickerel measured 19.1 inches. One chain pickerel measuring 20.86 inches was collected during the trap net survey. The gill net survey was successful in collecting a total of 17 chain pickerel. These pickerel ranged in size from 10.5 to 25 inches. Ten of the chain pickerel were

larger than 17 inches in length. Catch rates of chain pickerel were higher in Little Creek Reservoir than in nearby Chickahominy Lake during the 2006 survey year.

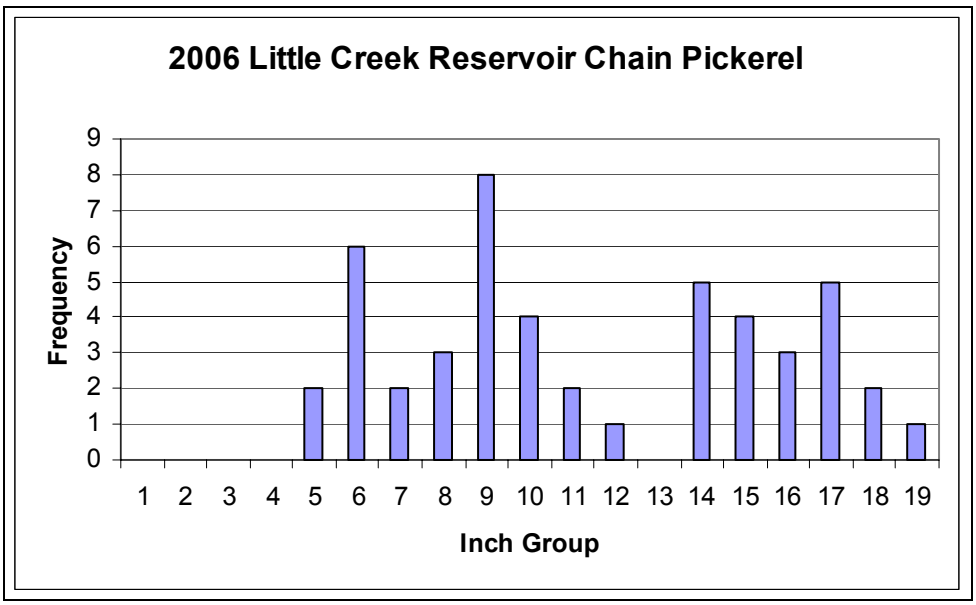

Figure 5. Length frequency distribution of chain pickerel collected during the electrofishing survey of Little Creek Reservoir on April 27, 2006 (N = 48, CPUE = 24/hr)

Little Creek Reservoir has historically been one of the better regional waters for anglers to catch a citation-sized yellow perch. Unfortunately DGIF sampling has not been able to find the large schools of perch that are present. A total of only 11 yellow perch were collected during the electrofishing. The CPUE of 11/hr is not that impressive, but it is still an improvement from the 2003 survey (CPUE = 8/hr). The size distribution consisted primarily of perch in the 4 to 7.5 inch range. The trap net survey was unsuccessful in catching any yellow perch. The gill net survey produced only 7 yellow perch that ranged in size from 9 to 12.3 inches.

The redear sunfish population appears to be in good shape even though an abundance of young fish was detected. A total of 186 redear sunfish were collected over the course of three electrofishing runs. The CPUE of 186/hr is lower than the 2003 sample (CPUE = 225/hr). The 2006 size distribution consisted of a large proportion (75.8%) of fish in the 2 to 4 inch range. The abundance of small redear sunfish lowered the average sized redear sunfish to 4.2 inches in length. Little Creek Reservoir is one of the few impoundments that appear to be very successful in producing strong year classes of redear sunfish. The trap net sampling was also successful in collecting an abundance of redear sunfish. A total of 308 redear sunfish were collected to yield a CPUE of 15.4 redear/net night. The redear sunfish ranged in size from 2 to 8 inches with the majority in the 3 to 5 inch range. The gill net survey collected only 10 redear sunfish that measured in the 4 to 11 inch range.

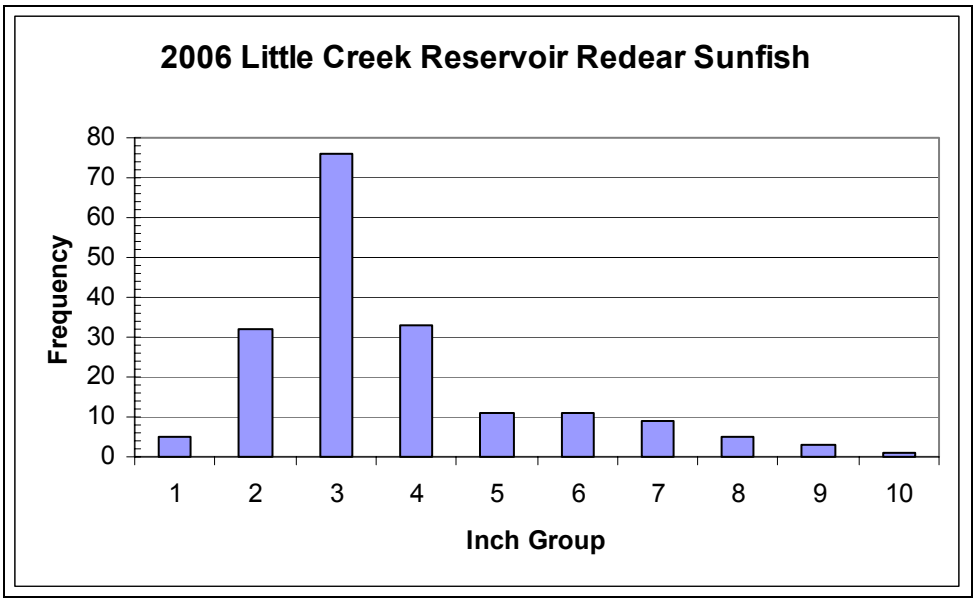

Figure 6. Length frequency distribution of redear sunfish collected from the electrofishing sample of Little Creek Reservoir on April 27, 2006 (N = 186, CPUE = 186/hr)

The remaining 6 species of fish collected during the electrofishing survey were American eel, channel catfish, bowfin, warmouth, golden shiner and tadpole madtom. These fish were collected in limited abundance and provide some diversity to the fishery.

The trap net survey collected a total of 12 species. A variety of the major game fish species have been covered in the text of this report. The trap nets were able to provide additional data on the population dynamics of the bluegill and redear sunfish. The remaining 7 species caught in limited abundance during the trap net survey were: brown and yellow bullheads, creek chubsuckers, American eels, bluespotted sunfish, warmouth and banded sunfish. Of these species, warmouth were the most abundant with a total of 50 collected. The warmouth ranged in size from 2 to 7.5 inches with the majority of them in 4 to 5 inch range.

The gill net survey was conducted on November 27-29, 2006 and on December 11-13, 2006. The western half of the reservoir was sampled the first night with 5 gill nets set off of main lake points. The eastern half of the reservoir was sampled the second night with the same nets. These experimental gill nets were 150 feet long and comprised of six 25 foot net panels. The net panel sizes were 0.75, 1.0, 1.25, 1.5, 1.75 and 2.0 inch. These experimental gill nets are intended to catch striped bass of different sizes as well as a variety of forage fish. The gill net survey collected a total of 15 species. The overall catch was rather low with only 275 fish collected. The gill net survey produced a low abundance of striped bass. A total of only 13 striped bass were collected. The catch rate of 0.59 fish/100 m sq is rather low when compared to the 2003 survey (N = 27, CPUE = 1.02 fish/100m sq). The small sample size only allows for a limited look into the status of the striped bass population. Two juvenile striped bass of 8 and 12 inches were collected. Ten striped bass measured in the 20 to 27 inch range. The largest striped bass measured a whopping 40.31 inches and weighed approximately 22 to 23 pounds.

The black crappies were well represented with a total of 90 collected. The gill nets were unsuccessful in collecting any blueback herring. A total of only 29 gizzard shad were collected. The majority of the shad ranged in size from 13 to 18 inches with only three small shad in the 7-inch range. The reservoir has additional forage in the form of golden shiners. A total of 46 golden shiners were collected. The shiners ranged in size from 6 to 9 inches and will make a nice meal for the larger bass and chain pickerel. A total of 19 channel catfish were collected during the gill net survey. The catfish showed a good size distribution with 17 fish greater than 16 inches in length. The largest catfish measured 25.3 inches. The remaining six species collected during the gill netting were bluegill, brown and yellow bullheads, white catfish, creek chubsucker and warmouth. These fish were all collected in limited abundance.

Little Creek Reservoir provides a wide variety of fish species for anglers. The electrofishing, trap net and gill net surveys were used to piece together as much data on the fishery as possible. These surveys were successful in collecting certain species while unsuccessful with others. This is just the nature of sampling. The crystal clear waters encountered during the spring and the steep shorelines make for a difficult time in addressing the strength of the largemouth bass fishery. Anglers that fish the reservoir on a regular basis are able to catch decent numbers of bass in the 3 to 5 pound range. The bluegill fishery is primarily based on an abundance of small fish less than 6 inches in length. The electrofishing of black crappies was spotty. The schooling nature of black crappies makes for a difficult time of finding them. Trap net surveys showed limited success in catching black crappies. The gill net survey was the most successful sampling technique. The overall collection of black crappies showed a high percentage of fish in the 8 to 10 inch range with good numbers of 11 to 12 inch crappies. Recent fishing reports reveal that anglers are having good luck in finding black crappies that weigh up in the 2 to 2.5 pound range. The reservoir produces some nice redear sunfish in the 6 to 8 inch range with the chance of catching redear in the 10 to 11 inch range. The reservoir provides decent action for striped bass. Striped bass anglers are usually able to catch a few decent striped bass on any given day. The majority of striped bass anglers rely on catching their own bait (blueback herring, gizzard shad) before targeting the large striped bass that live in the reservoir. Some anglers are able to catch striped bass on bucktail jigs when the bass are on an active bite. Little Creek Reservoir has been producing a good number of trophy yellow perch over the last few years. The reservoir produced a total of 52 citations in 2006 with 20 yellow perch, 11 sunfish, 9 black crappies, 8 striped bass, 2 largemouth bass, 1 walleye and 1 rock bass.